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When Women Say Yes: Sexual Initiation, Minority Status, and Opportunity Costs

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WHEN WOMEN SAY YES:

SEXUAL INITIATION, MINORITY STATUS, AND OPPORTUNITY COSTS

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Chris A. Flippo

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APPROVAL SHEET

This thesis is submitted in partial fulfillment of

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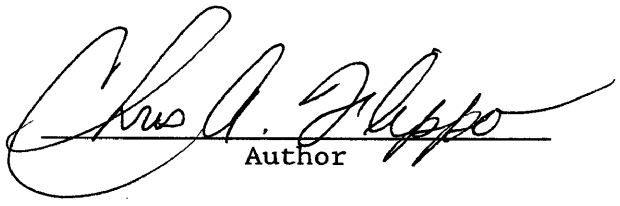

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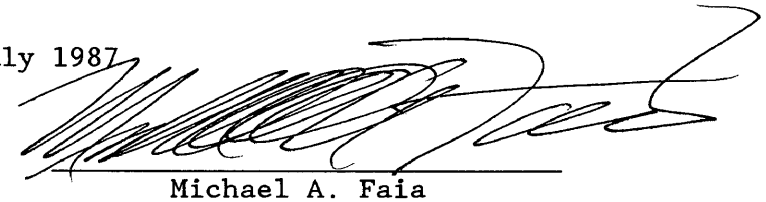
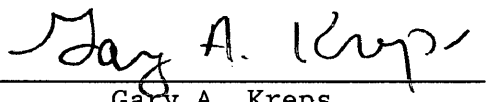


Michael A. Faia



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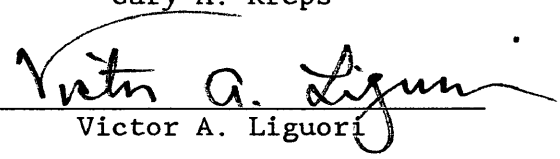

Victor A. Liguori

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ABSTRACT

The purpose of this study is to examine the relationship between education and age at first intercourse, the first intermediate variable which contributes to fertility outcomes. Forward stepwise regression analysis was utilized to examine secondary data from the National Survey of Family Growth. Three separate regression analyses were performed for blacks, Hispanics, and whites to investigate race differences. However, the Hispanic analysis proved to be of little substantive interest since none of the independent variables, other than age, was significant. Consequently, only the results for blacks and whites are discussed. Age at first intercourse was utilized as the dependent variable, while education was the independent variable of substantive interest. Income, age at menarche, age in years, mother's educational attainment, marital status of parents in teen years, and frequency of attendance at religious services were also put in the equations as controls. Results were discussed for these variables, as well as for the effect of education upon age at first intercourse.

The data supported the opportunity structure hypothesis, in that, education tended to have a positive impact upon the decision to become sexually active for both blacks and whites. This fertility reducing decision is discussed as a response to mobility opportunities. The data failed to support the minority group status hypothesis because there was no race by education interaction. Thus, it appears that blacks and whites respond to mobility aspirations in much the same manner when it comes to initiating sexual intercourse.

In an effort to further specify the nature of the positive relationship between age at first intercourse and educational attainment, the analyses for blacks and whites were run a second time with controls for early first birth introduced. In this case, education fell out of the equation, indicating that the relationship between education and fertility behaviors is very complex.

Also of interest is the finding that blacks still have an earlier age at first intercourse than whites. It is suggested that the opportunity structure hypothesis, alone, does not account for this fact. Thus, the present study indicates that it may be helpful to revise research and policy concerning teenage pregnancy so that it takes account of the differential cultural factors of racial groups at each of the intermediate stages to fertility outcomes.

WHEN WOMEN SAY YES:

SEXUAL INITIATION, MINORITY STATUS, AND OPPORTUNITY COSTS

Introduction

The present study is an analysis of secondary data designed to test the relationship between education and age at first intercourse. It is generally accepted that education is negatively related to fertility outcomes, but the nature of this relationship with particular fertility reducing behaviors is less clear (Kiser, 1960; Ruggles and Ruggles, 1960; Alvirez, 1973; Cochrane, 1979; Menard, 1979; Rindfuss, Bumpass, and St. John, 1980; Kasarda et al., 1986)[1]. The following study investigates the association between education and the intermediate variable, age of entry into sexual unions. Specifically, the differential opportunity structure, minority group status, and subcultural hypotheses will be discussed as they are applied to mobility and fertility outcomes. This is followed by a discussion of these hypotheses in relation to the intermediate variable, age at first intercourse for blacks, Hispanics, and whites in the Unites States. In accordance with the differential opportunity structure hypothesis, it was believed that age at first intercourse would be positively associated with education and that this relationship would not vary with race. To test this hypothesis, separate stepwise regression analyses were run for blacks, Hispanics, and whites utilizing the National Survey of Family Growth (NSFG). The structural variable, female's educational attainment, is utilized as the key explanatory variable associated with age at first intercourse. The Beta

weights for each category of women, black, Hispanic, and white, were compared to explore whether specification with the minority group status hypothesis is plausible and reasonable. It should be noted that this study was not designed to test the minority group status hypothesis, however, because the NSFG does not incorporate the necessary data. The same is true for the subcultural hypothesis.

Literature Review

Theoretical Perspectives

The above hypotheses have been utilized to support three theoretical perspectives which are designed to explain total fertility outcomes. One perspective discusses several intermediate variables, such as age of entry into sexual unions, celibacy, amount of reproductive years spent outside of unions, voluntary and involuntary abstinence, frequency of coitus, voluntary and involuntary fecundity, contraceptive practices, and voluntary and involuntary fetal mortality (1956:212). Davis and Blake argued that, "...any cultural factor that affects fertility must do so in some way classifiable under one or another of [these] eleven intermediate variables" (1956:213). Bongaarts and Potter proposed an alternative theoretical perspective for explaining total fertility (1983). They condensed these eleven variables which make up total fertility into several components. Total natural fertility has to do with fecundity effects, such as breastfeeding and post-partum initiation of sexual activity. A nation's total fertility rate would take account of contraceptive and abortion practices within marriage for analytical

simplification. Finally, they used the term total marital fertility to refer to fertility exposure practices. Nonmarital and premarital exposure to pregnancy would have to be classified here since this model assumes that exposure takes place within marriage.

Taking a crosscultural perspective, Easterlin suggested that, as a nation develops, a collective move toward universal education takes place and more young people are encouraged to extend their education beyond the elementary level (1985). This, in turn, increases the cost of raising children by extending their period of dependency upon the family. The increased cost makes it impossible to have more than a few children in order to maintain a certain standard of living. Thus, the supply of children begins to exceed the demand; this excess is the motivation to reduce fertility. Supply factors include fecundity and child mortality (the equivalent of total natural fertility), while demand factors are such things as ideal family size, age at marriage, education, and income. Any or all of these variables may involve social psychological, as well as structural, processes. Indeed the negative impact of education, suggests the opportunity structure hypothesis, is a result of deferred gratification values. These perspectives are all significant, because they suggest that if all structural and cultural variables associated with each of these intermediate, proximate, or supply-demand variables could be determined, total fertility would be explained.

Caldwell took a different perspective than all three of these authors, because he argued that even if these proximate variables

could be summed up to explain the total fertility of a nation, there is still the problem of explaining cross-cultural variations that occur in the effects of known correlates of fertility behavior (1982). He pointed out that developing nations vary in the degree and timing of the effect any specific variable may have on total fertility rates because of micro-cultural and economic processes which take place within varying family systems. For example, although it is generally known that education negatively impacts total fertility rates and marital fertility exposure, it is unlikely that it will have the same degree of effect in Korea as it did in the United States. It may be that education impacts total fertility through varying proximate and exogenous variables (i.e. age at marriage and communication and understanding of reproduction and contraceptive practices; Cochrane, 1979; Kasarda et al., 1986). As a result, although total fertility can be accounted for if all cultural and structural variables are known, this matter is complicated by the unique economic and social conditions of the nation under investigation. In order to simplify this issue, the present study focuses upon the proximate variable, exposure to intercourse, in an effort to estimate the relationship between mobility and fertility.

The Opportunity Structure Hypothesis: Methodological Considerations

The well known economic hypothesis of fertility, the differential opportunity structure hypothesis, emphasizes deferred gratification in the decisions women make concerning fertility. Thus, it serves as a useful explanation for the lower fertility of

higher status women. These women, it is suggested, suppress their fertility because of a desire to take part in the American opportunity structure. Since education has traditionally been pointed to as a means to improve one's lot in life, these women may engage in fertility suppressing behavior in accordance with the demands of their educations and careers (Bean and Swicegood, 1985).

This effect is also related to the opportunities for advancement and improvement lost by females who take time off from work to bear and raise children. The more educated the woman the more likely she is to have a higher paying and prestigious job. For these women, the costs of taking time off from a career in order to have and rear children is more extensive than for those whose jobs offer fewer rewards (Cochrane, 1979; Cramer, 1979; Rindfuss, Bumpass, and St. John, 1980; Easterlin and Crimmins, 1985; Kasarda, Billy, and West, 1986). Another explanation offered suggests that more educated women develop careers which, in turn, conflict with traditional familial roles. As a result, these women reduce their fertility by extending birth intervals or having a later first birth (Stycos and Weller, 1967; Smith-Lovin and Tickamyer, 1978). Waite and Stolzenberg explain their findings as follows:

> Women who have career interests recognize that their careers depend on the ability to offer employers useful skills obtained through specialized training and/or on the job experience. These women risk substantial depreciation of their skill (or "human capital") through disuse and obsolescence if they withdraw from the labor force for a considerable period to care for young children. For a woman who does not work when her

> children are below school age, skill depreciation can be minimized by having fewer children (1976:748).

Similar economic interpretations of fertility are supported by the findings of several other researchers (Lee and Lee, 1952; Lee and Lee, 1959; Farley, 1966; Easterlin, 1969; Moore, Simms, and Betsey, 1985; Easterlin and Crimmins, 1985). This type of explanation suggests that some women are consciously or subconsciously responding to the structural demands of education and economics by reducing the number of children they desire or have by making fertility reducing decisions. Thus, although education may effect fertility outcomes indirectly through exogenous variables, such as labor force participation (Cochrane, 1979; Easterlin and Crimmins, 1985), this does not rule out the possibility that education impacts fertility directly through its effect upon the proximate determinants of fertility. If this is the case, the present study should find that education is positively related to age at first intercourse, which would be a fertility reducing behavior. Thus, the substantive question in this study is whether education impacts age at first intercourse in the same way it is believed to effect total fertility outcomes.

The issue of whether education is related to age at first intercourse is not an easy one to sort out, however, because of several complicating factors. First, education is also positively associated with age at first birth (Chilman, 1980; Hogan and Kitagawa, 1985; Moore, Simms, and Betsey, 1986). This complicates the association between education and age at first intercourse, because those females who had an early first birth were more

likely to have reported dropping out of high school and to have had lower aspirations before becoming pregnant (Jessor and Jessor, 1975; Chilman, 1980). Although this implies that higher educational achievement is associated with later first births, supporting the opportunity structure hypothesis, the variance associated with it may overlap considerably with that associated with age at first intercourse.

Second, if there is a positive association between age at first intercourse and education the direction of causation cannot be conclusively determined in the present analysis. If educational aspirations impact age at first intercourse, desires for mobility may lead young females to put off coitus to avoid risk of an unwanted pregnancy or high involvement in school may simply leave less time for socializing with males (Jessor and Jessor, 1975; Chilman, 1980; Cramer, 1980; Rindfuss et al., 1980; Rindfuss and St. John, 1983; Hogan and Kitagawa, 1985; Moore, Simms, and Betsey, 1986). Another explanation is that early intercourse or first birth leads to reduced interest in and/or time for educational activities (Mott and Marsiglio, 1985; Statham, Vaughan, and Houseknecht, 1987). A final possibility is that causation is reciprocal as Waite and Stolzenberg and Smith-Lovin and Tickamyer suggested for labor force participation and fertility (1976; 1978). However, the Jessor and Jessor study showed that, although females who give birth while in high school are more likely to drop out, they are also more likely to have had lower aspirations prior to sexual initiation or first birth (1975). Thus, the weight of the

evidence seems to suggest that education impacts fertility behavior in the long run more than the reverse.

The Minority Group Status and Opportunity Structure Hypotheses Compared

In accordance with the structural assimilationist perspective, some have suggested that limited opportunities for advancement in the American occupational structure cause fertility outcomes to vary according to one's ascribed position in the social order (Goldscheider and Uhlenberg, 1969; Bean and Swicegood, 1985). Consequently, whereas the differential opportunity structure hypothesis focuses upon structural opportunities and responses to opportunity, the minority group status hypothesis focuses upon structural limitations and responses to such limitations. The latter hypothesis introduces an intervening variable, anxiety, which is believed to result from assimilating females' marginal positions; for they are neither totally part of their minority culture nor of the majority culture. Although much progress has been made since the initiation of affirmative action (Farley, 1977; Smith and Welch, 1972), it is suggested that felt discrimination leads to anxiety which, in turn, leads to assimilating decisions and behaviors. One avenue for achieving acculturation is higher education and the desire for this may lead some minority females to suppress their fertility to a greater extent than majority females. According to this hypothesis, then, the decision to have fewer children is magnified by the fact of membership in a sociological minority.

Like the opportunity structure hypothesis, the above

hypothesis suggests that membership in a minority group impacts fertility decisions through educational attainment. Figures 1 and 2 contain diagrams of the opportunity structure and minority group status hypotheses, respectively. These figures show that the relationship between education and fertility outcomes is direct in the case of the opportunity structure hypothesis (in the sense that its effects upon certain intermediate variables is to reduce fertility), whereas for the minority group status hypothesis the degree of the effect of educational attainment on fertility depends upon the degree of desire for assimilation or the degree of discrimination felt by the minority member. High desire and high levels of discrimination would lead to feelings of anxiety and insecurity, and thus, to perceived need to take extra measures in order to be upwardly mobile.

As this discussion shows, the minority group status hypothesis is a specification of the opportunity structure hypothesis. In both cases, education is believed to impact fertility negatively, but in the case of the minority group status hypothesis this effect is made stronger by the distress associated with minority membership. Statistically, this means that education and race must interact in their impact upon fertility outcomes and age at first intercourse. Evidence for the minority group status hypothesis would involve a sharper decline in fertility for minority females in comparison with majority females as educational level rises (Figure 3b).

Figure 1. Opportunity Structure Hypothesis

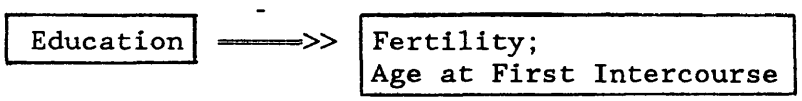


Figure 2. Minority Status Hypothesis

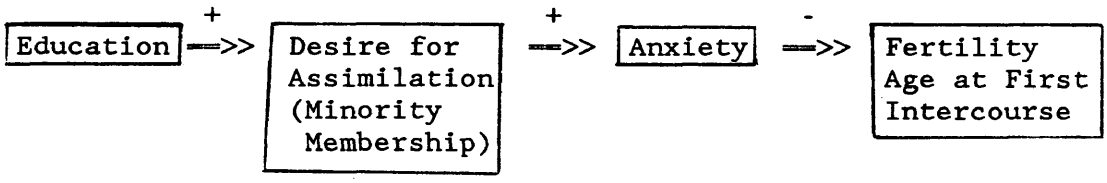
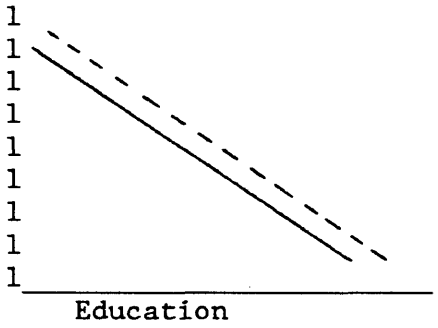
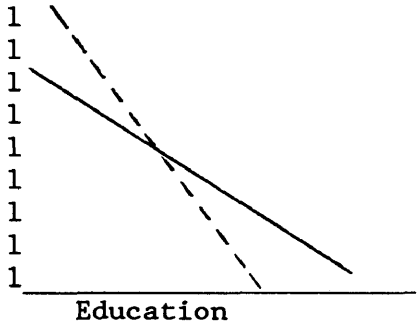


Figure 3. Three Possible Interactive Relationships of Ethnicity/Race and Education on Fertility Behavior*

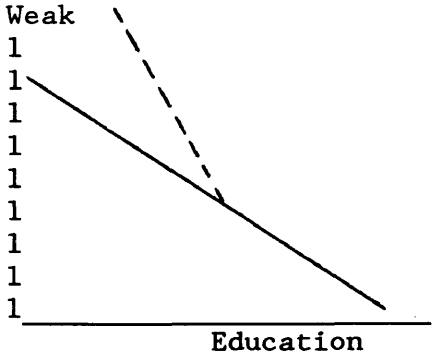
3a Opportunity Structure



3b Minority Group Status: Strong



3c Minority Group Status: Weak



*Note: Minority -------; Majority _____. The vertical axis is fertility in the case of the original formulations of the theory (adopted from Johnson, 1979:1388).

Taking off from Goldscheider and Uhlenberg's article which suggested support for this hypothesis (1969), Johnson argues that there are two forms of support for the minority group status hypothesis, a strong and a weak form (1979). In the strong form minority fertility is higher than that of the majority among the less educated, but among the more educated females, minority fertility is lower than that of the majority (Figures 3b and 3c). The weak form of this hypothesis suggests that no significant difference between minority and majority fertility is detectable among the higher educated, but among the lower educated minority fertility is higher. Although little evidence is available concerning the strong form, there is some support for the weak form (Roberts and Lee, 1974; Ritchey, 1975; Marcum and Bean, 1976; Lopez and Sabagh, 1978; Cooney, Rogler and Schroder, 1981; Bean and Swicegood, 1982).

In a recent work, Bean and Swicegood argued that because blacks have less access to desired structural rewards than Hispanics, this lack of access is, "associated with sharper declines in fertility as education rises" (1985:143). The sharper declines are a result of hypothesized anxiety due to more extreme discrimination. In support of this, Rosenfeld showed that nonwhites and females do receive less rewards than equally educated and experienced white males in the American economic system. Indeed, members of both categories are relegated to lower status, secondary occupations (1980). Thus, more limited access to resources for blacks is more likely to generate anxiety in those who desire to be structurally assimilated. If the

opportunity structure hypothesis is more applicable to the Mexican-American situation and the minority group status hypothesis is more applicable to the black situation, as the authors suggested, education should have a more negative impact on black fertility than Mexican-American fertility (Bean and Swicegood, 1985).

Theoretically, however, this argument attenuates if one considers the following. First, any minority fertility outcomes could be interpreted through the minority status hypothesis if fertility levels decline with educational attainment and if one considers the possibility that insecurities and anxieties could vary between minority groups (Bean and Wood, 1974). Second, it may be that stress has little to do with the reduced fertility of higher educated minority females. This effect may be a result of an awareness of control and the desire for career advancement which accompanies increased educational attainment. In other words, it may simply be a mobility effect associated with deferred gratification as is often assumed to be the case for minority members. Since children have traditionally been a barrier to a female's opportunities for career advancement due to career interruptions (Rosenfeld, 1980), some black females may simply have a desire for high achievement which causes them to put off the birth of their first child and/or to spread out birth intervals in accordance with the demands of their education and careers. This argument is supported by the findings of Sly (1976) and Johnson (1979), who both argued that educational attainment leads to structural assimilation. Their findings suggested

support for a transitional explanation which hypothesizes that as education increases, minority members assimilate. This increased structural assimilation leads to social assimilation, such that minority fertility rates converge with majority rates. Although support for this hypothesis would look much like support for the weak form of the minority group status hypothesis, no anxiety or discrimination is involved (Johnson, 1979). In this case, the apparent race by education interaction is accounted for by introducing controls for social characteristics.

Third, there is evidence that structural shifts have taken place since the 1969 publication of Goldscheider and Uhlenberg's article. For example, some blacks have made significant gains in white collar occupations, and, as a result, this may no longer be a driving force for middle class black females. It has been shown that blacks experience much less structural discrimination due to color differences (Wilson, 1978). Indeed, blacks of high education achieve as high as similar whites in many cases, even though other blacks may be experiencing other types of barriers to mobility associated with membership in the lower classes (Farley, 1977; Smith and Welch, 1977; Wilson, 1978; Hout, 1984). Furthermore, black females experience little or no structural discrimination in reference to white females. Farley found that black females exceeded or equalled white females in proportion employed over three decades (Farley, 1977). In reference to occupational prestige, nonwhite females have held their own in service, clerical, and sales positions relative to white females and their wage returns for education either exceeded or equalled

that of similar white women (Farley and Hermalin, 1972; Farley, 1977). Although some of this progress has been made only in the public sector for blacks, the fact that many have made financial gains suggests support for the opportunity structure hypothesis, rather than the minority group status hypothesis, because the hypothesized anxiety associated with structural discrimination may be nonexistent[2]. This supports Wilson's findings in that the impact of racial factors upon mobility and fertility behavior is declining (Wilson, 1978).

Because of this hypothesized racial anxiety, some debate over the theory has arisen since the 1969 publication of Goldscheider and Uhlenberg's article. Overall, structural assimilation and the desire for it have been concretized by utilizing educational attainment and its interaction with race. Little has been done to measure the extent, indeed, the existence of this hypothesized anxiety and insecurity. In actuality, when education is utilized as the measure of upward mobility and desire for mobility, only structural assimilation is being measured and not the desire for mobility, assimilation, or felt anxiety (1974). Although Roberts and Lee suggest that this methodological limitation is less serious when precise measures of minority membership are utilized, the key explanatory variable remains unmeasured, and any study which fails to measure the extent of felt anxiety due to discrimination is inadequate in its test of the minority group status hypothesis.

The Subcultural Hypothesis:

The Importance of Ethnic and Class Norms

Of concern in reference to the opportunity structure and minority group status hypotheses is the fact that both assume that blacks, whites, and Hispanics form homogeneous collectives. Although this is useful for analytical purposes, evidence indicates that subcultural values may be important for groups such as Mexican-American Hispanics. Thus, much debate has focused upon the fact that acculturation does not take place at the same time as structural assimilation (Gurak, 1978). Gurak explains the problem as follows:

> Group differences that are too complex to be satisfactorily explained within the social characteristics framework may have little to do with majority-minority dynamics per se; rather, they may reflect the results of institutionalized behavior patterns rooted in the cultural heritage of a particular ethnic group...structural assimilation and cultural assimilation can vary independently of each other (Gurak, 1978:307).

It is clear that support of one hypothesis over another is highly dependent upon the structural assimilation of a group, but rarely takes into account the fact that cultural assimilation may lag behind or race ahead of structural assimilation. As a general rule, structural assimilation and acculturation have both been measured in terms of structural variables, of which education is the most prominent.

Because of this, more recent researchers have devised methods for measuring the impact of this acculturation among minorities. For example, acculturation has been measured with factors such as generation of residence in the United States (Marcum and Bean,

1976; Bean and Swicegood, 1982; 1985), religiosity (Sabagh and Lopez, 1980), use of Spanish and English (Lopez and Sabagh, 1978; Cooney et al, 1981; Bean and Swicegood, 1985), and ethnic composition of residential area (Ritchey, 1975; Yancey, Erickson, and Juliani, 1976; Bean and Marcum, 1978; Cooney et al., 1981; Bean and Swicegood, 1985). In most cases, it was found that the less ethnic behavior the respondent reported, the greater the effects of education upon minority fertility outcomes. In other words, females who aspired to have non-minority friends, who absorbed the religious behaviors of Americans, who aspired to live in or actually lived in mixed neighborhoods, who spoke more English, and who were later generational residents in the United States were more likely to suppress fertility and to achieve higher levels of education. This supports the assimilation aspect of the opportunity structure perspective, because as minority members become structurally assimilated, their cultural values, including fertility, converge with those of majority females.

A second question which has been raised concerning subcultural values involves the role of concepts like familism, fatalism, and machismo in fertility. Familism values tend to have a positive effect upon fertility behavior, because the needs of the collective family override the needs of the individual. This is magnified by the machismo concept which suggests that females take on a subservient role in the home relative to their husbands (Jones, 1948; Penalosa, 1968). However, more recent data suggests that the male dominance pattern is declining, that it never existed, or that Mexican-American male-female relationships

converged with the majority pattern (Hawkes and Taylor, 1975; Bean, Curtis, and Marcum, 1977). This again supports the opportunity structure hypothesis in that, after assimilation, minority and majority members respond to educational opportunities in the same manner.

Closely related to this is the implication that minority people see no way to improve their lives and to control fate, and as a result, they trust their luck when it comes to birth control (Farris and Glenn, 1976). However, data indicates that when educational attainment is controlled, differences in fatalistic attitudes between majority and minority members disappear (Farris and Glenn, 1976). This implies that fatalism is largely a result of social class and not of minority membership (Rainwater, 1960).

Incorporating such analyses into future research would be valuable since it may enable researchers to account for findings which the opportunity structure and minority group status hypotheses fail to account for, such as the younger age at first coitus and first birth of highly educated blacks (Zelnik and Shah, 1983; St. John and Grasmick, 1985). However, the importance of these cultural factors in relation to fertility behavior is a question which remains unanswered. Yancey, Erickson, and Juliani argued that ethnicity factors will only become important when few outside networks are formed and enclaves develop (1976). This is one of the major reasons cited for the failure of inner city blacks and ethnic subgroups to assimilate and live out the cultural values of modern America. On the other hand, both Ritchey (1975) and Lopez and Sabagh (1978) suggested that the

effect of culture upon fertility is minimal for blacks and Chicanos, respectively. Rather, they argued, structural factors are the key to explaining fertility differentials. To summarize, this discussion of ethnic culture serves to further illustrate the complexity of fertility differentials, and reminds the student of fertility that there are problems with claiming support for one hypothesis over another without taking account of cultural, as well as, structural factors within a single nation, nonetheless crossculturally.

In light of the complexity associated with fertility outcomes it may be more useful to examine the hypotheses discussed above in terms of the ethnic and socioeconomic status differentials associated with the proximate variables (Davis and Blake, 1956; Bongaarts and Potter, 1983; Easterlin and Crimmins, 1985). In terms of the theories discussed above, age at first coitus, age at marriage, frequency of intercourse, and contraceptive behaviors may be influenced by a female's desire for an education and career or a couple's desire to be upwardly mobile. Thus, for each intervening variable discussed by Davis and Blake, these women should be more likely to make fertility-depressing decisions in accordance with deferred gratification and mobility values. For example, they should be more likely to defer sexual initiation, to effectively use contraceptives, or to have an abortion in the case of an unwanted pregnancy. The present study's focus upon age at sexual initiation and its relationship with education may be particularly interesting at this time because of the fact that young people are becoming sexually involved at younger ages and

because of the prevalence of premarital and nonmarital pregnancy (Zelnik, Kim, and Kantner, 1979; Zelnik and Shah, 1983).

Data Base

The study is based on secondary data analysis. Although it is limited to analysis of cross-sectional data, it provides an effective means to explore the efficacy of the opportunity structure hypothesis. The data is taken from the National Survey of Family Growth, Cycle III. This survey was administered to 7969 women sampled from the target population of "civilian noninstitutionalized" women 15 to 44 years of age in 1982 (National Center for Health Statistics, 1985:1). It is a five-stage cluster sample covering the entire nation. In the first stage, the continental United States was divided into 1900 metropolitan and rural areas by county and city. From this sampling frame, 25 areas were randomly selected. In the second stage, the 25 areas were stratified according to the percentage of blacks and whites represented in the areas as well as by the size of the areas. Since it was desirable to oversample blacks, weighted random samples of enumeration units within the 25 areas were taken. Third, each enumeration unit was segmented into blocks according to the number of housing units it contained and a random sample of these was taken from each enumeration district. Fourth, since 15 to 19 year olds were to be oversampled as well as race, households were stratified according to age and race of eligible females in the houses. Weighted samples were then taken from each age and racial group. Finally, interviewers went to the selected households to determine how many eligible women lived in

the households. From this list, a random sample of respondents was selected such that no two females from the same household were included. Furthermore, during this stage a multistage probability sample was utilized in order to include women living in college dormitories. The final response rate was 79.4% (National Center for Health Statistics, 1985). Because of this sampling process and because of the oversample of blacks and 15-19 year old females, weighting procedures were applied to the data. As with all retroactive interviews, this study is limited by the accuracy of respondents' memories.

Table 1. Summary of Dependent and Independent Variables used in the Regression Equation.

Variable	Measurement	NSFG Code
Dependent Variable		
AGEINT	Continuous; Min=7, Max=42	SXH26139
Independent Variables		
EDUC	Continuous; Min=0, Max=18	EDS26130
INCOM	Continuous; Min=0, Max=99	WFS26132
Control Variables: Biological Characteristics		
MENARC	Continuous; Min=6, Max=21	BFH26180
Control Variables: Status Characteristics		
AGE	Continuous; Min=20, Max=44	RAS26126
MAEDUC	Continuous; Min=0, Max=18	FHS26138
RACE	Selected according to black, white, or Hispanic origins	
Control Variables: Social Characteristics		
PARDIV	Dummy; Divorced=1, Intact=0	FHR26094
ATTEND	Never=1, 2=once a year, 3=several times a year, 4=once a month, 5=2 or 3 times a month, 6=once a week, 7=more than once a week	RLB26101
AGEBIRTH	Continuous; Selects those who had first birth after 20 years old; used in second analysis of data	CBH26207

Operationalization of Variables

Table 1 contains a summary of the variables which were put into the regression equation. The dependent variable, age at first intercourse, is a continuous variable which is the respondent's answer to the question, "Thinking back, after your first menstrual period, when did you have sexual intercourse for the first time--what month and year was that? How old were you at that time?" (NSFG, Cycle III, C-2a). The answer to the second portion of this question, age at the time, is utilized as the dependent variable (AGEINT). The independent variable of substantive interest here is respondent's educational level (EDUC). It is a continuous variable based on the number of years of schooling ever attended as reported by the respondent (NSFG, Cycle III). Both Kasarda et al. and Cochrane have argued that female educational attainment is the most important factor in her ultimate achievement (1986; 1979). Until recently, female achievement or status was often assumed to be highly dependent upon that of her husband, but data suggests that this is no longer the case because more females work outside the home (Cochrane, 1979; Kasarda et al., 1986). Also of importance here is respondent's income. Income is a continuous measure based on the percent of poverty level for 1982. If a respondent received a score under 100%, she received a total income below the poverty level in 1981, whereas if she had a score above 100% she lived above the poverty. This percent was given in three digits and was truncated to two digits for present analytical purposes. Thus, if a respondent had a score of 99.0%, they were living at a level 10

times that of the poverty level for the year indicated. It was determined from respondent's estimate of yearly income (INCOM, NSFG, Cycle III).

Ethnic origin, white, black, or Hispanic, was controlled by running separate equations for each group. Classification was determined by crosstabulating race with ethnic origin (NSFG, Cycle III, F-48 and F-49 respectively). Respondents were classified as Hispanic if they claimed to be Hispanic, regardless of their racial category (black/white). Blacks included all non-Hispanic black respondents and all others were classified as white. This resulted in total subsamples of 497 Hispanics, 3123 blacks, and 4349 whites. Evidence indicates that this breakdown is the most efficient because of the imprecision of the majority-minority and white-black distinctions (Roberts and Lee, 1974). Roberts and Lee found that distinguishing these three groups enabled them to account for more of the variance in fertility outcomes. If the majority-minority distinction is utilized Hispanics are thrown in the nonwhite category. This tends to merge the possible black-Hispanic differences discussed by Bean and Swicegood which may be operating (1985). If, on the other hand, the white-black distinction is utilized, Hispanics are thrown in with the whites. Theoretically, this is not the most efficient way to perform the analysis since Hispanic fertility does differ significantly from that of majority whites (Uhlenberg, 1973).

The literature concerning sexual initiation and the age at first coitus implies that it is necessary to control for several factors other than race in order to examine the relationship

between educational attainment ultimately achieved and age at first intercourse. The first control variable, age at menarche (first menstruation), was determined by respondents' reported age at first menstruation (MENARC, NSFG, Cycle III). It has been argued that age of menarche is positively related to age at sexual initiation (Cutright, 1972; Davidson and Leslie, 1977; Zelnik and Kantner, 1977; Presser, 1978; Newcomer and Udry, 1984). Zelnik and Kantner suggested that a slight pattern existed between these two variables for blacks, but that this was not the case for whites (1977). Similarly, Presser found the relationship between age at menarche and age at first birth to be stronger for blacks than for whites (1978).

Second, respondent's present age in years is controlled, because of its direct relation to age at first coitus and to control for possible cohort effects due to the so called "sexual revolution" (Hofferth, Kahn, and Baldwin, 1987; AGE, NSFG, Cycle III). Third, status characteristics of family of orientation were controlled because of the fact that socioeconomic status correlates with both education and age at first intercourse. Generally, girls from middle income and occupational prestige families put off intercourse longer than those from lower income categories. Furthermore, respondents' educational attainment is positively related to SES of family of orientation (Gordon, 1973; Davidson and Leslie, 1977; Strahle, 1983; Hogan and Kitagawa, 1985). Since parental education is highly correlated with family income and parents' occupational prestige, mother's education is utilized as an indicator of SES of family of

orientation (MAEDUC). Education of mother is the number of years she ever attended school (NSFG, Cycle III). Fourth, it may be important to control for marital status of parents during adolescence, because there is some evidence concerning the possibility that divorce lessens parental control over adolescent delinquent behavior (Hogan and Kitagawa, 1985; Newcomer and Udry, 1987). Newcomer and Udry, in particular, found that compared with living in a stable, natural parent household, those who lived in a mother-only household were more likely to make the transition from virginity to coitus (1987). Similarly, Hogan and Kitagawa show that differences in family structure and neighborhood quality account for a significant proportion of the variance associated with the higher fertility of inner city blacks. Thus, to control for parental marital status during adolescent years, a dummy was created in which those living in a divorced home received a score of 1 and those living in a intact two parent home received a score of 0 (PARDIV, NSFG, CYCLE III). The final variable, religiosity, is controlled because of its relationship with sexual activity. Religious females are more likely to put off sexual intercourse or remain virgins until marriage (Davidson and Leslie, 1977; Mirande, 1977; Lopez and Sabagh, 1979; Antonovsky, 1980; Cvetkovich and Grote, 1980; Rindfuss and St. John, 1983; Strahle, 1983; Notzer, Levran, Mashiach, and Sofer, 1984; Sack, Keller, and Hinkle, 1984; Studer and Thornton, 1987). Religiosity is a measure of how often the respondent reported attending church. It is a scale ranging from never to more than once a week (ATTEND, NSFG, Cycle III).

Methodology

In this study, it was statistically and theoretically advantageous not to include certain groups of females in the data analysis. First, those who were virgins at the time of the interview were not included since this study is concerned with age of sexual initiation and not with comparing virgins with nonvirgins. Second, only those 20 years of age and older will be included in the analysis. This exclusion of teen respondents is advantageous because it helps to eliminate some confusion as to the direction of causality. By excluding younger respondents, only those who were finished or nearly finished with school were included; this procedure insured that the measure was based on completed education and not on something which was still largely in process. Since respondents cannot report an age at first intercourse older than their cohort age, this procedure also eliminates the heteroskedastic distribution produced by this fact. In other words, the distribution of age at first intercourse would violate the homogeneity of variance and the normal distribution assumptions of regression analysis if these teens were included. Although regression is a robust procedure, to violate both of these assumptions may prove unreliable. This selection procedure yielded 66, 83, 65% subsamples for whites, blacks, and Hispanics, respectively. Thus, 2876 were white, 2572 were black, and 322 were Hispanic. Because of this selection process the boundaries of this study will be limited to those noninstitutionalized women from 20 to 44 years of age who have ever experienced sexual intercourse.

After this selection process was completed separate forward stepwise regressions were performed for blacks, whites, and Hispanics utilizing pairwise deletion of missing values (See Table 2). The F-test for significance was utilized and the significance level was set at .05 for each equation. Separate analyses were run for each subsample because each variable entered into the equation had the potential to interact uniquely with race. Kerlinger and Pedhazzur suggested a method for examining such an interaction when one is concerned with the interaction of a categorical and continuous variable, but it was decided that separate analyses would yield more information parsimoniously (1977). Univariate distributions were examined for irregular distributions and nonlinearities, but other than the selection procedures discussed above, it was not necessary to make any transformations or calculations. Residuals indicate no patterns in the variance not accounted for in all three equations. Originally, a test of difference was going to be run between the coefficients for education, but upon examination of the results, it was decided that the difference in the Beta weights was not substantively important, although it may have achieved significance. Although this paper has argued that education impacts fertility behavior, and not vice versa, this cannot be determined by a regression run of cross-sectional data. Indeed, as was pointed out earlier, others have argued the opposite. The present study is not an attempt to sort out the direction of causation between fertility and education, for the research design provides no longitudinal or time series data in which to deal with

this issue. Although it is argued that the direction of causation is mainly from education to fertility and the intermediate variable, age at first intercourse (Rindfuss et al., 1980), all findings should be interpreted cautiously and viewed as exploratory.

Results

Surprisingly, none of the variables, except for present age was significantly related to age at first coitus for Hispanics. This result may be due to the fact that the number of Hispanic respondents after the selection procedures was somewhat small (322). As a result, when several controls were introduced, many of the cells may have had few or no respondents. Thus, only the results of Blacks and whites will be discussed in this section.

When comparing the descriptive statistics of Table 2, there were some apparent differences between blacks and whites. For this sample, white females had a higher average education and income than blacks. This result may be partly due to the effect of age. It is likely that differences are greater for older than younger females, since Farley found that by the early 1970's black females held their own in the job market (1976). The inclusion of older females, pulled the average black income down, and consequently, it is likely that this differential will disappear as more educated black females join the work force. Concurring with this explanation, note the difference between blacks and whites in the relationship for education and age in Tables 3 and 4. This suggests that older blacks are less likely to have higher educations than younger blacks. However, the fact that this

correlation is less than moderate suggests that younger black females have made significant gains in relationship to white females, such that cohort membership is becoming less important in the determination of educational attainment as is the case for whites. It is also significant that income and age are more strongly correlated for whites than blacks. This suggests that as whites age and gain experience, they are more likely to make economic gains than blacks. However, because more black females are going on to college, it is likely that more blacks will begin to see significant economic gains with increasing age and experience.

Table 2 also shows that blacks tend to have a younger age at first intercourse than whites. A test of difference between the means for the three groups, blacks, whites, and Hispanics,

Table 2. Descriptive Statistics for Blacks and Whites; Frequencies Reflect Pairwise Deletion of Missing Values.

Variable	Min	Max	Mn	SD	N
Black					
AGEINT	8	29	16.78	2.53	2572
EDUC	3	18	12.31	2.28	2572
INCOM	0	99	1.65	1.81	2572
MENARC	6	19	12.55	1.82	2571
AGE	20	44	30.42	6.97	2572
MAEDUC	0	18	10.31	3.20	2572
PARDIV	0	1	.14	.34	2572
ATTEND	1	7	4.63	1.73	2203
White					
AGEINT	7	42	18.36	2.81	2876
EDUC	1	18	13.04	2.28	2876
INCOM	0	99	2.73	1.97	2876
MENARC	6	19	12.42	1.58	2876
AGE	20	44	31.18	6.91	2876
MAEDUC	0	18	11.55	2.75	2876
PARDIV	0	1	.11	.31	2876
ATTEND	1	7	3.92	2.06	1817

revealed that there were significant differences in the age at first intercourse at the .05 level of significance. Descriptive statistics indicate differences in variability between blacks and whites concerning this variable. The maximum age at first intercourse for whites far exceeds that of blacks, pulling the white mean up. Furthermore, univariate distributions, show that by age 20, over 93% of blacks had experienced intercourse, while this was so for only 80% of whites (not shown in table). Thus, it appears that a substantial proportion of whites experienced first intercourse after their teen years, while this was not so for blacks.

However, this difference cannot be attributed to the interaction of educational attainment and race as the minority group status hypothesis suggests[3]. This hypothesis requires that education and race interact in their effect upon age at first intercourse, but the beta coefficients differed very little indicating that this is not the case. Indeed, the white coefficient was larger than that in the black equation, which is the opposite of what the minority group status hypothesis requires for support. Of substantive importance and significance, however, is the fact that education had a positive impact upon age at first intercourse for both groups. The coefficients for the educational attainment variable not only achieved significance but proved to be very important for blacks and whites. For both, education was the first variable entered into the equation. The beta weights indicate that for blacks, every 2 1/2 years of educational

attainment is associated with over three-fourths of a year's delay in sexual initiation, while for whites every 2 3/4 years is associated with nearly a year's delay in initiation of sexual activity. Thus, evidence for the differential opportunity structure hypothesis appears to be a reasonable explanation for the positive relationship between education and age at first intercourse.

The substantial positive impact of education upon age at first intercourse is suggestive of support for the opportunity structure hypothesis, because of the fact that education is a major avenue of mobility and occupational advancement for females (Rosenfeld, 1980). In support of this, the income coefficient for blacks was positive and the zero order correlations for income and age at first intercourse were positive for both blacks and whites. However, income proved to be an insignificant variable in the regression analysis for whites. At first glance, this appears to suggest support for a race by income interaction, but it should be noted that income was the last variable entered into the black equation. Further, the coefficient was so small as to be substantively unimportant. Although further research is needed to rule out the possibility of a race by income interaction, it is likely that it fell out of the equation for whites and had minimal impact for blacks, because it is highly correlated with education, and education accounted for most of the variance associated with income. This is consistent with the arguments of Cochrane and Kasarda and associates which suggest that education is the single best indicator of female SES or achievement (1979; 1986).

Table 3. Zero Order Correlations for Blacks

Var.	AGEINT	EDUC	INCOM	MENARC	AGE	MAEDUC	PARDIV	ATTEND
AGEINT	1.00	.33	.19	.18	.17	.08	.02	.12
EDUC		1.00	.37	-.02	-.10	.22	.03	.09
INCOM			1.00	-.03	.08	.17	.00	.06
MENARC				1.00	.11	-.02	-.01	-.11
AGE					1.00	-.24	-.04	.11
MAEDUC						1.00	.11	-.04
PARDIV							1.00	-.03
ATTEND								1.00

Table 4. Zero Order Correlations for Whites

Var.	AGEINT	EDUC	INCOM	MENARC	AGE	MAEDUC	PARDIV	ATTEND
AGEINT	1.00	.35	.16	.08	.28	.07	-.15	.17
EDUC		1.00	.32	-.04	.02	.37	-.10	.02
INCOM			1.00	-.01	.15	.13	-.05	-.06
MENARC				1.00	-.02	-.01	-.01	-.00
AGE					1.00	-.18	-.05	.12
MAEDUC						1.00	.01	-.04
PARDIV							1.00	-.05
ATTEND								1.00

Table 5. Significant Regression Findings: With Age at First Intercourse as the Dependent Variable and Education and Control Variables as the Independent Variables

	Black		White	
Variable	b	B	b	B
EDUC	.338	.306	.415	.337
INCOM	.078	.056	--	--
MENARC	.246	.177	.171	.096
AGE	.065	.180	.102	.250
MAEDUC	.043	.054	--	--
PARDIV	--	--	-.868	-.097
ATTEND	.136	.093	.180	.132
Constant		6.339		7.060
R^2	.189		.232	

Furthermore, such an interaction would imply a race effect which conflicts with the findings of several researchers (Wilson, 1978; Hout, 1984). Indeed, the negative zero order correlation between education and age for blacks is suggestive of gains for

younger members of this minority.

Several of the control variables also proved to be interesting. First, age at menarche, was significant for both blacks and whites. As it turns out, the relationship is stronger for blacks, than it is for whites concurring with the findings of Newcomer and Udry (1984), Presser (1978), and Zelnik and Kantner (1977). Cutright discusses this relationship in light of the fact that both the age at menarche and age at first intercourse have been steadily declining in the western world over several decades (1972). It is generally believed that this is due to increased technology, which brings with it improved health and nutritional practices. This latter improvement, then, speeds up the rate of physical development and reduces the age at menarche. Thus, prior to this decline in age at menarche, it is likely that the low teenage illegitimacy rates were due to biological as well as to social constraints. Cutright then argues that increasing fecundity rather than increasing nonmarital sexual activity accounts for much of the rise in teenage nonmarital pregnancy from 1940 to 1960 (1972). The correlation between age at menarche and age at first intercourse, it could then be argued, may be due to the fact that age at menarche and age at first coitus are becoming more aligned in time due to health advantages and resulting biological changes, rather than to a sharp increase in promiscuousness (Zelnik and Kantner, 1980). Even if there were an increase in the rate of nonmarital sexual activity, it could be argued that females and males who mature earlier are more likely, because of biological changes in their bodies, to initiate

intercourse earlier and, therefore, risk pregnancy for longer periods of time.

Concerning status characteristics, there were several interesting findings. Respondents age was significant and was entered into the equations on step two for both blacks and whites. It is probable that recent cohorts initiate sex earlier than each preceding cohort (Hofferth, Kahn, and Baldwin, 1987). Since dummying cohorts yielded similar results, it is also likely that the so called "sexual revolution" has been slowly, but steadily taking place since the 1950's, but that it did not speed up or encourage the trend toward earlier sexual initiation in the 1960's or any other time. In the future, this trend will probably level off at or near the average age at menarche for both blacks and whites, because of the positive association between these two variables. Interestingly, mother's education fell out of the equation for whites, but was slightly correlated with age at first intercourse for blacks. It is likely that this is due in part to the increasing importance of social class, over race, in the impact upon fertility (Wilson, 1979; Hout, 1984). Blacks are more likely to be represented among female headed households and female headed households are more likely to be living below the poverty level than any other type of household (Farley, 1977). As a result, mother's education may be a major deciding factor in the determination of family of orientation SES for blacks. If this is the case, when father's education is included in the equations, it should have greater impact for whites than for blacks, and mother's education should remain in the equation for blacks.

Whether the parents were divorced during the respondents' adolescent years proved to be significant only for whites such that 18% of those white females from nonintact homes were likely to initiate intercourse earlier than those from intact homes. This correlation was also supported by the zero order correlation for whites (Table 4). Newcomer and Udry suggest that, rather than being due to psychological malfunctions or disruptions, this effect is due to a loss of control over the childrens' overall lifestyles. As a result, these youth are more likely to engage in several forms of deviant behavior, only one of which is increased sexual activity (1977). This is consistent with the findings of Jessor and Jessor which showed that adolescents who make the transition from virginity to nonvirginity were more likely to be poor students, to be involved in deviant behaviors, and to come from nonintact homes (1975). In support of this, the zero order correlation for education and parental marital status indicates that for whites, a divorce may inhibit educational attainment (Table 4; before this can be determined, however, SES should be controlled to be sure this is not an artifact of social class). This variable may not have been significant for blacks because of the fact that the percentage of single parent households has traditionally been higher. As a result, since more blacks experience divorce and single parent homes, they may have adjusted to the high divorce rate more readily than whites who experienced rising divorce rates more recently. This is consistent with the fact that mother's education remained in the equation for blacks, but not for whites, which suggests that female headed households

are more economically institutionalized and socially normative among blacks, while this is not yet the case for whites. Consequently, given time, it is likely that parental marital status will not be an important factor for whites because they, too, will begin to view single parent households as normative rather than as disrupting. Finally, as was expected, attendance at religious services was an important factor for both blacks and whites, although slightly moreso for whites. Higher attendance is associated with later ages at first intercourse, consistent with previous findings (Strahle, 1983; Studer and Thornton, 1987).

Upun further examination of the data, it was decided that because of the positive relationship between age at first birth and education, age at first birth needed to be controlled as a possible intervening variable (Hogan and Kitagawa, 1985; Moore, Simms, and Betsey, 1986). Thus, the equations for blacks and whites were run a second time with controls added for age at first birth. This was done by selecting only those females who had no children or who had given birth to their first child after the age of 20 (NSFG, Cycle III). Results of this analysis are shown in Table 6 (see Appendices 1 and 2 for descriptive statistics and zero order correlations, respectively). Interestingly, this procedure caused the education variable to fall out of the equation for both blacks and whites.

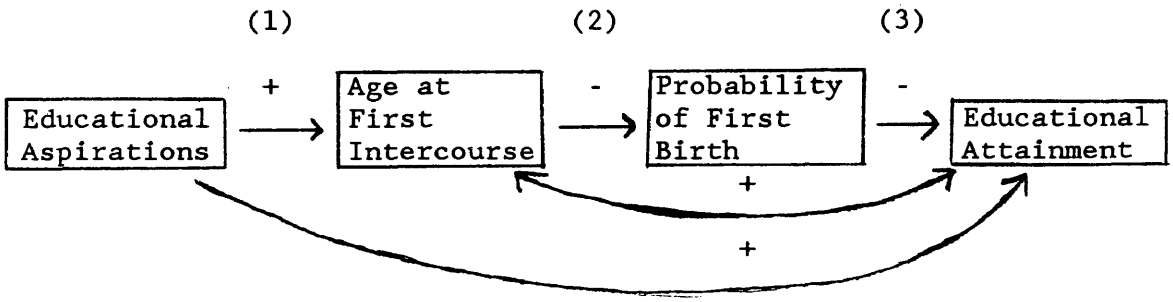
The fact that education fell out of the equation also shows that the relationship between education and fertility behavior is extremely complex. Figure 4 contains a diagram of the causal relationship this implies. The deciding factor in educational

achievement is not age at first coitus, but having an early first birth. Causally, this implies that an early first birth may account for much of the variance of educational attainment associated with age at first intercourse, and thus, this is an intervening variable in the relationship between educational attainment and age at first intercourse. The present data analysis assumes that educational attainment is highly dependent upon educational aspirations. Thus, in order to clarify this relationship, educational aspirations are included in Figure 4 even though they were not measured in the present study. The

Table 6. Significant Regression Results of Age at First Intercourse With Age at First Birth Controlled

	Black		White	
Variable	b	B	b	B
EDUC	--	--	--	--
INCOM	.129	.093	--	--
MENARC	.123	.091	--	--
AGE	.089	.232	.136	.327
MAEDUC	.071	.086	--	--
PARDIV	--	--	--	--
ATTEND	.156	.106	--	--
Constant	11.938		14.520	
R^2	.092		.107	

Figure 4. The Relationship Between Educational Aspirations, Age at First Intercourse, Age at First Birth, and Educational Attainment[4]



arrows between educational attainment and age at first intercourse indicate that this relationship may be reciprocal, but the literature and the present findings strongly suggest an indirect positive relationship from educational aspirations to educational attainment through age at first intercourse and age at first birth (Jessor and Jessor, 1975; Rindfuss et al., 1980; Rindfuss and St. John, 1983; Hogan and Kitagawa, 1985; Moore, Simms, and Betsey, 1986). Although the arrows between educational aspirations and age at first intercourse point out that early intercourse may attenuate educational aspirations (Figure 4, Part 1), it has been found that females who initiate intercourse early have lower aspirations and desires for achievement prior to first intercourse (Jessor and Jessor, 1975; Moore, Simms, and Betsey, 1986). These females probably become more highly involved in social activities with males because of boredom and dissatisfaction with school, and this earlier social involvement leads to an earlier age at first coitus.

The second arrow from age at first intercourse to probability of an early first birth shows that age at first intercourse always precedes the latter in time. It is likely that its relationship with fertility is negative in that early sexual initiation increases fertility, while late initiation decreases fertility (Figure 4, Part 2). Descriptive statistics for the late birth subsample indicate that these females experienced intercourse between one and two years later than the total subsample (Table 7, Appendix). The final arrow from fertility to education suggests that early birth decreases educational

attainment (Figure 4, Part 3; Chilman, 1980; Mott and Marsiglio, 1987). This large impact of an early birth results because early initiators are more likely to become pregnant and to give birth at an early age. They then find it difficult to finish high school, nonetheless to obtain a post-secondary education.

Thus, the negative relationships between age at first intercourse and fertility and fertility and educational attainment produce a multiplicative, positive sign between age at first intercourse and educational attainment, accounting for this apparent direct positive relationship. If this is the case, it is not early sexual initiation which inhibits educational attainment, but early birth[3]. Thus, females who put off first birth by delaying intercourse, by using contraceptives effectively, or by reducing the frequency of coitus are less likely to have an early first birth and are more likely to finish high school and gain some post-secondary education. In Figure 4, the arrows from age at first intercourse and age at first birth back to educational attainment illustrate this latter aspect of the relationship between education and age at first coitus.

Also of interest in the second run of the data is the fact that age, income, mother's education, attendance at church services, and age at menarche all remained in the black equation, while only age remained in for whites. The fact that age remained in the equation for both blacks and whites indicates that there has been a steady decline in the age at first intercourse for both groups. Income again remained for blacks, but not whites. This suggests a race by income interaction, indicating that further

research is needed to determine the nature of its impact upon black age at first intercourse. Mother's education also remained in the black equation again, supporting the notion that mother's education may be a better indicator of social class for blacks than for whites.

Attendance at religious services may have fallen out for whites in the second analysis because of the fact that sexual intercourse is less stigmatized among middle class adults, because the consequences of an unwanted pregnancy are easily handled with an abortion (Powell-Griner, 1986). On the other hand, less blacks have the financial resources to obtain an abortion even if it is acceptable; as a result, religion continues to perform the function of stigmatizing nonmarital sex and keeping religious unmarried women from becoming pregnant. Interestingly, the first analysis indicates that religion remains a strong factor in the stigma associated with adolescent nonmarital sex for both blacks and whites (Table 5), while for adults the effect remains only for blacks (Table 6). Finally, age at menarche remained in the equation for blacks, because of the fact that all cohorts of blacks have an earlier age at first coitus than whites.

Discussion

A Prospective Model

While the strong positive association between age at first intercourse and education supports the opportunity structure hypothesis, there is more to this than appears because of the fact that education fell out of the equation for both groups when age at first birth was controlled. Although Figure 4 contains arrows

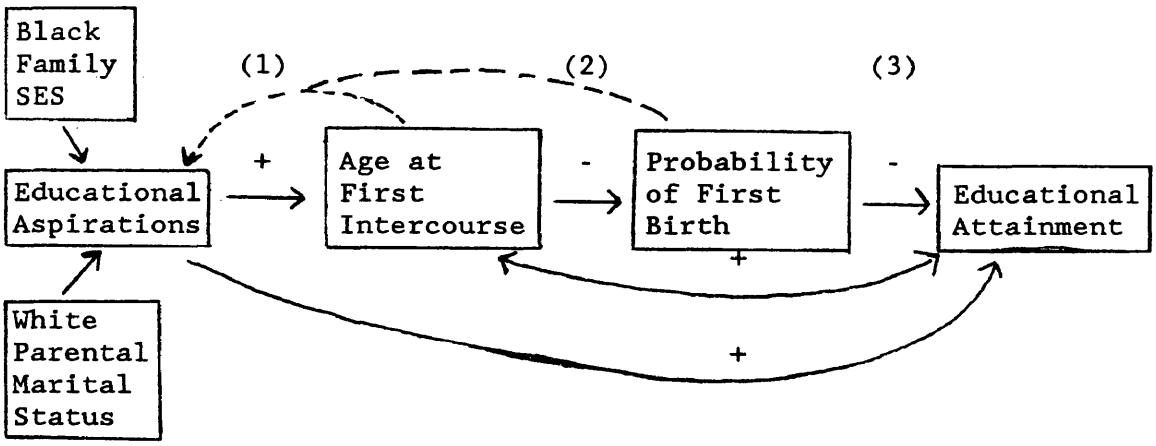
indicating the positive relationship between education and age at first intercourse, it is more likely that educational attainment is impacted by age at first intercourse indirectly through age at first birth and educational aspirations. Thus, although the opportunity structure hypothesis is often tested by measuring educational attainment, a key explanatory variable in the hypothesis is educational aspirations. Furthermore, since age at first birth is the significant intervening variable, the positive association between age at first intercourse and education is accounted for by the negative associations between having an early baby and education and age at first intercourse. This is explained as follows. Early initiating females may have felt that school was unrewarding at an early age (Jessor and Jessor, 1975; Rindfuss et al., 1980). As a result, they put more time into relationships with males and spent less time in educational activities. Because they became involved in social activities with males earlier, it is likely that they initiated sex earlier than other females. This early initiation put them at greater risk of pregnancy and early birth. Those who had an early birth, found that this impeded their ability to continue school because of financial and social responsibilities. As a result, a substantial portion of these females dropped out of high school or found it impossible to continue their educations beyond high school (Mott and Marsiglio, 1985).

At the same time, those females who initiated sex later, probably became highly involved in school and developed high aspirations early, and consequently, invested less time in

relationships. Later on, it is likely that many made a conscious effort to avoid an unwanted pregnancy by utilizing contraceptives effectively or by spacing their births. As a result, they were able to spend more time on their educations for longer periods because they put off first or subsequent births. Although the opportunity structure hypothesis suggests that these females consciously "decided" whether to become sexually involved based on their perceptions of the costs and rewards of children, it is more likely that the timing of sexual initiation is a consequential behavior rather than a carefully thought out decision. This lends support to the opportunity structure hypothesis, because those females with high aspirations are more likely to put off intercourse, less likely to become pregnant, and thus, more likely to be able to take advantage of opportunities for advancement, such as education. This implies that educational aspirations play an important role in the conscious or coincidental avoidance of an early first birth. Such an explanation would explain the substantial impact of education upon age at first intercourse as well as the fact that it dropped out of the equation when age at first birth was controlled.

Although this explanation accounts for the fact that education fell out of the equation when age at first birth was controlled, it does not account for the fact that blacks have an earlier average age at first coitus than whites (St. John and Grasmick, 1985). It is likely that this difference is associated with normative class differences which are often assumed to be racial or ethnic differences. The present findings that parental

Figure 5. Summary Model of Mobility and Fertility Variables



marital status was significant for whites, but not for blacks and that the reverse was true for mother's education and income is suggestive of this type of an explanation for the earlier age at first coitus for blacks. The latter findings indicate that SES of family of orientation is a greater factor for blacks than for whites. Again this is suggestive of support for Wilson's theory which suggests that racial factors are becoming less important in the determination of future SES, while family of orientation SES is becoming more important. This effect remains because blacks are more likely to be represented among the lower classes than whites, and thus, they are more likely to be affected by lower class norms in one of two ways.

First, it has been found that lower class black and inner city parents exert less influence upon the dating behavior of their adolescents (Hogan and Kitagawa, 1985). Much of this effect may be due to the fact that lower class black mothers are more likely to work full time and to accept this as a normative way of life. As a result, they find that they must work to support the

family and many simply do not have the time to continually be involved in the lives of their adolescents (Hogan and Kitagawa, 1985). Thus, the teenagers date at younger ages and become sexually involved at younger ages. Although Hogan and Kitagawa's study found that parental marital status was also a significant factor for the lower class blacks in their Chicago sample, it is likely that this is a class effect resulting from the fact that blacks are more likely to be represented among female headed households which are lower in income (Farley, 1977). This interpretation is supported by the present analysis which showed that when income and mother's education were controlled, parental marital status fell out of the equation for blacks but not for whites. Indeed, it is likely that female headed households are viewed normatively among blacks, while they are seen as disrupting and destabilizing among whites.

Second, it has also been suggested that the differences in the ages at first birth and first intercourse between blacks and whites is associated with the fatalism some young blacks feel (Luker, 1975; Hogan and Kitagawa, 1985). Such fatalism is suggested because blacks are over represented in the unemployed, poor aggregates of society (Farley, 1977). No matter how hard some adolescent black males try, they are unable to find a job, because, as Farley shows, "the proportion of young men [16 to 24 years of age] in the labor force is now substantially lower among nonwhites than among whites" (1977:195). Their unemployment has always exceeded that of similar whites, but in the mid-1970's the gap in teenage unemployment widened between the races (Farley,

1977). Inner city, lower class females who meet these young males may eventually suspect that they, like their mothers, will be unable to find a husband who can support a family. As a result, marriage loses its significance as an option to financial independence and improving one's lot in life. These girls, then, come to see bearing a child as the most important factor in achieving adult status (Rains, 1970).

In support of the opportunity structure hypothesis, it is likely high aspiring lower class females become aware of the limited chances for upward mobility through marriage; thus, they decide to take advantage of opportunities for mobility through their own efforts, and thus suppress their fertilty after an early first birth (St. John and Grasmick, 1985). The most efficient means for achieving this would be effective contraceptive use or abstinence. As a result, it appears that an awareness of education as a means of improvement and desire for upward mobility leads black females to avoid the consequences of a mobility limiting pregnancy by putting off intercourse and/or using contraceptives effectively after an early first birth, while for whites this is accomplished by putting off intercourse and first birth (Zelnik and Kantner, 1980; Zabin and Clark, 1981; St. John and Grasmick, 1985; Nathanson and Becker, 1986).

However, the fatalism and family structure effects are both largely a result of social class, rather than race characteristics (Rainwater, 1960). Thus, rather than supporting a race perspective, the data appears to be supporting the social class interpretation of fertility behavior. The present explanation,

then, suggests a slight revision of Figure 4. Figure 5 contains a summary diagram of the present analysis and speculative discussion. Such a subcultural explanation combined with a structural one helps to make up for the failure of the opportunity structure hypothesis to account for the earlier age at first birth and intercourse among blacks suggested by St. John and Grasmick (1985), without conflicting with the opportunity structure hypothesis suggested by the strong positive association between education and age at first intercourse and the negative associations from age at first intercourse to fertility and fertility to education.

Implications for Policy

Although there are methodological and theoretical limitations to this study because of the inability to show the direction of causation, it is significant because of its emphasis upon the proximate variable, age at first coitus. This may be a key to gaining an understanding of fertility differentials since it is likely that this differential outcome is due to differential processes associated with each intervening variable. Despite the fact that the direction of causation from education to age at first coitus cannot be determined in the present analysis, the fact that such a strong association exists has important implications for policies concerning teenage pregnancy in the United States and overpopulation in developing countries. It suggests that a revised approach to researching and developing fertility reducing programs be developed which attacks both fertility problems at the intermediate variable stages. Such a

strategy would require that multiple programs be designed, rather than the traditionally cited solution of making contraceptives available to lower class and adolescent individuals, for it suggests that educational aspirations must be developed early to have an effect upon total fertility.

Concerning the teenage illegitimacy problem in the United States, experience indicates that although making contraceptives available to youth has been helpful, it, by itself, has not and will not alleviate the problem. This is because a significant proportion of early initiating females put off visitation to a family planning clinic for a year or more after first intercourse (Zabin and Clark, 1981). Consequently, programs which attempt to defer sexual initiation may be used to supplement family planning programs. Since the positive impact of education on age at first intercourse suggests that educational aspirations and opportunities for advancement may lead some adolescent females to avoid an early birth, getting those at highest risk of pregnancy to avoid intercourse may be one avenue for reducing total teenage fertility. If younger females could be informed about the risks of unprotected intercourse and about the consequences of an early birth, many may decide to delay first intercourse or use contraceptives more effectively in order to avoid a mobility limiting early pregnancy. Encouraging young people to wait by encouraging high educational aspirations would also lead to greater contraceptive use at first coitus, since those who initiate sex in the later teen years are more likely to utilize contraceptives (Zelnik and Kantner, 1980). Thus, if they could be

persuaded to delay first intercourse for a year or so, because of strong encouragement to set educational goals, they would be much less likely to be at risk of pregnancy when they do initiate intercourse.

At present, however, mobility through education or any other means is merely a dream for many lower class females because of perceived financial and structural barriers. If those perceived barriers could be removed, perhaps younger females would feel the need to avoid intercourse and to use contraceptives more effectively in order to avoid an unwanted and mobility limiting early pregnancy. Before this can take place lower class females will have to be convinced that structural barriers to mobility (i.e. class barriers) will be minimal with increased educational attainment. Financially, this would require substantial investment in the futures of lower class youth by charitable and religious organizations, because, at present, education beyond high school appears to be financially impossible. Educators and parents, alike, could encourage sports participation and academic excellence. Effective contraceptive practices and the consequences of an early birth should be discussed with adolescents, since, as Cutright points out, the high teenage illegitimacy rates suggest we can no longer pretend that nonmarital and premarital sex do not exist (1972). To summarize the present argument, if females do, indeed, respond to the decision to become sexually involved in terms of educational or career aspirations, encouraging educational involvement may be a key factor in reducing teenage fertility rates.

Although this finding may appear to be universal, it is doubtful that education will be related to age at first coitus in this manner in developing societies, because its effect upon supply and demand characteristics is more complex than we often assume. Concerning supply characteristics in developing countries, it must be kept in mind that many educated couples continue to desire large families (Easterlin and Crimmins, 1985). This is due to the fact of high infant and child mortality rates. Thus, although these families may only desire a few children, fear of early child death causes them to state much higher ideal family sizes. In reference to demand characteristics, it must be pointed out that these women seldom view children as hindrances to economic improvement. For example, Caldwell showed that in one nation, children are valued because of the fact that large families are a symbol of prestige and honor. It is also believed that children carry on the spirits of their dead parents, and thus, to have no children is to have no afterlife. Consequently, in such nations it is likely that educational aspirations delay sexual initiation through age at marriage and changing cultural values, rather than through mobility aspirations. The effect of marriage upon fertility is largely a result of economic necessity. With improvement, the better jobs are in the urban centers. Thus, young people are sent to relatives in the city to obtain an education and/or to work. As more females go to the city, they put off the initiation of conjugal relationships for longer periods. In a sense, this is a response to mobility aspirations since these famales and males put off sexual initiation and thus,

reduce total fertility by way of shorter periods of fecundity, but their intent is not to reduce total fertility. Rather, it is to get a good job in order to help take care of extended family members and to provide for the large families they intend to have (Caldwell, 1982). The reduced fertility may also result from the fact that educated women come to see that having her own small children and small grandchildren leads to conflict or that having children after a certain age is dangerous. Thus, the mobility response to opportunity in these nations is not necessarily to reduce fertility. Rather, it must be viewed as a side effect of increasing education and literacy until a certain level of educational attainment has been reached nationally. In any case, the positive impact upon age at first intercourse in the present study cannot be assumed to be similar to that of other nations, and as a result, further research is necessary to examine the effect of education upon the proximate determinants of fertility and its variability by nation.

Conclusion

In conclusion, the present analysis is significant for several reasons. First, it examined responses to mobility in terms of one proximate determinant of fertility, rather than in terms of fertility rates or outcomes. Second, it is significant that race was not an important variable in terms of mobility responses (Wilson, 1978). Thus, it is unlikely that the minority group status hypothesis is applicable to the intermediate variable under discussion in the present study. This is consistent with the argument of Wilson, who found that race is no longer the

deciding mobility factor (1978). Rather, SES of family of orientation has become the determining factor for future educational attainment. Finally, the present study is significant because of the fact that educational attainment is positively associated with age at first intercourse through educational aspirations and age at first birth, in support of the opportunity structure hypothesis. This is suggestive of further research which incorporates the proximate determinants of fertility into the analysis, because such findings will have important implications for cross-cultural and national fertility programs.

APPENDIX

Table 7. Descriptive Statistics for Blacks and Whites Controlling for Age at First Birth; Frequencies Reflect Pairwise Deletion of Missing Values.

Variable	Min	Max	Mn	SD	N
Black					
AGEINT	8	29	18.18	2.44	886
EDUC	3	18	12.83	2.35	886
INCOM	0	99	1.80	1.75	886
MENARC	6	19	12.80	1.82	886
AGE	20	44	32.91	6.32	886
MAEDUC	0	18	10.28	2.94	886
PARDIV	0	1	.12	.32	886
ATTEND	1	7	4.89	1.66	755
White					
AGEINT	7	42	19.10	2.56	1417
EDUC	1	18	13.30	2.17	1417
INCOM	0	99	2.70	1.75	1417
MENARC	6	19	12.42	1.55	1417
AGE	20	44	33.62	6.15	1417
MAEDUC	0	18	11.48	2.73	1417
PARDIV	0	1	.10	.30	1417
ATTEND	1	7	4.26	2.05	925

Table 8. Zero Order Correlations for Blacks Controlling for Age at First Birth

Var.	AGEINT	EDUC	INCOM	MENARC	AGE	MAEDUC	PARDIV	ATTEND
AGEINT	1.00	.08	.13	.07	.24	.06	.01	.12
EDUC		1.00	.38	-.07	-.10	.21	.01	.11
INCOM			1.00	-.08	.08	.15	-.03	.09
MENARC				1.00	.03	.01	-.05	-.21
AGE					1.00	-.18	.03	.12
MAEDUC						1.00	.02	.00
PARDIV							1.00	-.03
ATTEND								1.00

Table 9. Zero Order Correlations for Whites Controlling for Age at First Birth

Var.	AGEINT	EDUC	INCOM	MENARC	AGE	MAEDUC	PARDIV	ATTEND
AGEINT	1.00	.28	.17	.03	.33	.01	-.15	.18
EDUC		1.00	.32	-.09	.08	.34	-.10	-.03
INCOM			1.00	-.02	.21	.16	-.06	-.09
MENARC				1.00	-.01	-.03	.00	.03
AGE					1.00	-.19	-.05	.03
MAEDUC						1.00	.04	-.09
PARDIV							1.00	-.08
ATTEND								1.00

Notes

[1] Cochrane (1979) and Stycos and Weller (1967) among others discuss the evidence for an inverse relationship between educational attainment and fertility outcomes. Evidence seems to fall within two categories, aggregate and individual. The present study focuses mainly on individual level data to investigate this relationship, but Stycos and Weller, in particular, note that certain levels of economic development are necessary before this relationship is found in aggregate or individual level data. Cochrane suggests several important reasons for this fact. First, as a general rule as educational attainment and literacy rise in a nation, the result is a sudden, but temporary, rise in fertility. This is because of the improved technology and health procedures. However, in the long run, education tends to reduce fertility outcomes through its positive effects on age at first marriage, marital communication, and greater understanding of the reproductive system and contraception. This fits with the findings of Rainwater concerning lower or working class individuals in the United States (1960). Rainwater found that, generally, lower class couples utilized less effective, appliance contraceptives or the condom when they used contraceptives. However, because of their lack of adequate understanding of the reproductive system, many were unlikely to utilize a method at all. Thus, education may play an important role not only through encouraging adequate understanding of contraception, but also in its rational and consistent usage.

[2] There is mixed evidence as to how much blacks and other minorities have been able to improve their economic and social positions in life since the Civil Rights movement of the 1960's. On the one hand, scholars claim that real and significant gains for blacks have occurred in the American occupational structure (Farley and Hermalin, 1972; Farley, 1977; Smith and Welch, 1977). In reference to this study, it is significant that dollar for dollar, nonwhite females have approached the same level of financial returns as white females, even though this is not the case for males (Farley and Hermalin, 1972; Farley, 1977). If this is, indeed, the case the present study should find little difference between whites and nonwhites in terms of the effect of education upon age at first intercourse, because a difference would suggest a race effect. However, although significant gains have been made, most of the above authors also suggest that it has not been quite enough (Smith and Welch, 1977; Singelmann and Browning, 1980; Stahura, 1987). Some have emphasized a theory which suggests that the gains blacks have made since the early 1960's are not due so much to affirmative action, but to technological advances or to shifts in the economic market from a labor society to a service society (Bonacich, 1976; Smith and Welch, 1987). These shifts have enabled higher educated blacks

and some high school graduate blacks to make significant inroads into the white collar middle classes. However, they have also reduced the number of available jobs for uneducated, traditionally blue collar workers (Bonacich, 1976; Hayward and Coverman, 1987). Furthermore, Hayward and Coverman emphasize the fact that many blacks who have moved into higher status positions have done so, not in the private sector, but in the public sector. In other words, the anti-discriminatory legislation and action enacted by the government has forced government agencies and private contractors who work for the government to carry out affirmative action programs. As a result, educated blacks have made significant improvements in some areas, but relative to whites there are still disadvantages. Indeed, Wilson and Hout argue that race discrimination is no longer the key variable for black-white wage and prestige differences (1978; 1984). Rather, social class has become the key variable in occupational achievement. If this is the case, differences in wage and occupational prestige ratios will not be eliminated despite improvements for minorities. Society will be forced to live with a permanent underclass, which happens to be predominantly black, because of the cycle of poverty.

[3]This difference must be due to differences among the other control variables or to the impact of variables not entered into the present equation. The latter is a possibility because of the fact that the present study was not designed to test all the correlates of age at first intercourse, but merely the efficacy of the opportunity structure hypothesis. As a result, variables entered into the equation do not comprise an exhaustive list of correlates of age at first intercourse. Thus, because of the exploratory nature of the present study, only known correlates were included.

[4] It is important to note that in regression analysis it cannot be determined whether all the arrows belong there or how strongly they affect fertility behavior. Furthermore, many other arrows having to do with family of orientation are not included. Based on the present findings and past research, then, the proposed nature of this relationship is speculative and exploratory.

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